

IN THE CLAIMS:

Claims 69 and 70 have been amended herein. Please note that all claims currently pending and under consideration in the referenced application are shown below. Please enter these claims as amended. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-35 (Cancelled)

36. (Previously Presented) An apparatus for forming elongated composite structural members comprising:

a base;

at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry;

a carriage assembly movably coupled to the base;

at least one roller exhibiting a geometry having a substantially continuously convex engagement surface as it rotates about an axis, the engagement surface being configured to at least partially complementarily engage the least one mandrel as the at least one roller rolls there along, the at least one roller being coupled with the carriage assembly; and

at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the at least one roller.

37. (Original) The apparatus of claim 36, wherein the at least one roller and carriage assembly are mutually configured for the at least one roller to be removed from the carriage assembly and replaced by another roller exhibiting a geometry configured to substantially completely complementarily engage the at least one mandrel.

38. (Original) The apparatus of claim 36, wherein the at least one roller comprises a plurality of rollers coupled with the carriage assembly.

39. (Previously presented) The apparatus of claim 36, further comprising an automated material-dispensing device configured to dispense a plurality of plies of material over the at least one mandrel along a length thereof.

40. (Previously presented) The apparatus of claim 39, wherein the automated material-dispensing device is configured to dispense the plurality of plies of material including a first ply exhibiting a first width and at least a second ply exhibiting a second width different than the first width.

41. (Previously presented) The apparatus of claim 36, wherein the at least one roller and the at least one mandrel are complementarily configured to form an elongated composite structural member substantially exhibiting a cross-sectional geometry of a hat as taken transversely to a length thereof.

42. (Previously presented) The apparatus of claim 36, wherein the at least one roller and the at least one mandrel are complementarily configured to form an elongated composite structural member substantially exhibiting a cross-sectional geometry of at least one C-shape as taken transversely to a length thereof.

43. (Previously presented) The apparatus of claim 36, wherein the at least one roller and the at least one mandrel are complementarily configured to form an elongated composite structural member substantially exhibiting a cross-sectional geometry of at least one angle as taken transversely to a length thereof.

44. (Previously presented) The apparatus of claim 36, wherein the at least one roller and the at least one mandrel are complementarily configured to form an elongated composite structural member substantially exhibiting a cross-sectional geometry including at least one arcuate section taken transversely to a length thereof.

45. (Previously presented) The apparatus of claim 36, wherein the at least one force-applying mechanism includes at least one weight operably coupled to the at least one roller to press the at least one roller over the at least one mandrel.

46. (Previously presented) The apparatus of claim 36, wherein the at least one force-applying mechanism includes a hydraulic system.

47. (Previously presented) The apparatus of claim 36, wherein the at least one force-applying mechanism includes a pneumatic system.

48. (Original) The apparatus of claim 36, wherein the at least one mandrel includes a plurality of mandrels laterally spaced from one another.

49. (Previously Presented) The apparatus of claim 48, wherein the at least one roller is configured to move laterally with respect to a length of the substantially elongated geometry of the at least one mandrel and independently engage each of the plurality of mandrels.

50. (Original) The apparatus of claim 48, wherein the at least one roller includes a plurality of rollers, and wherein at least one roller of the plurality engages each of the plurality of mandrels.

51. (Previously presented) The apparatus of claim 48, wherein the plurality of mandrels includes a first mandrel exhibiting a first geometric configuration and a second mandrel exhibiting a second geometric different from the first geometric configuration.

52. (Original) The apparatus of claim 36, further comprising a heating device configured and oriented to heat at least a portion of any material disposed over the at least one mandrel.

53. (Previously presented) The apparatus of claim 52, wherein the heating device is coupled with the carriage assembly.

54. (Original) The apparatus of claim 36, further comprising a heating device configured and located to heat the at least one mandrel.

55. (Original) The apparatus of claim 36, further comprising a controller operably coupled with the apparatus and configured to control movement of the carriage assembly relative to the base about a plurality of axes.

56. (Previously presented) The apparatus of claim 55, wherein the controller is further configured to control operation of the at least one force-applying mechanism.

57. (Previously presented) The apparatus of claim 56, further comprising an automated material-dispensing device configured to dispense a plurality of plies of material over the at least one mandrel along a length thereof, and a heating device configured and located to provide heat to at least one of the plurality of plies and the at least one mandrel, and wherein the controller is configured to control operation of the automated material-dispensing device and the heating device.

58. (Original) The apparatus of claim 55, wherein the controller includes a processor, a memory device, at least one input device and at least one output device.

59. (Previously Presented) The apparatus of claim 36, wherein the at least one mandrel includes a first section extending along a longitudinal axis and a second section which deviates from the longitudinal axis, and wherein the carriage assembly and the at least one roller are configured to maintain engagement with the second section as it deviates from the longitudinal axis.

60. (Original) The apparatus of claim 59, wherein the at least one roller is configured to remain substantially continuously engaged with the at least one mandrel as it moves relative to the base over the first mandrel section and the second mandrel section.

61. (Previously Presented) The apparatus of claim 38, wherein the plurality of rollers includes a first roller configured to engage a first portion of the at least one mandrel and at least a second roller configured to engage a second portion of the at least one mandrel, the first portion of the at least one mandrel being substantially different than the second portion of the at least one mandrel.

62. (Previously Presented) The apparatus of claim 61, wherein the first roller is engaged with the first portion of the at least one mandrel and the at least a second roller is engaged with the second portion of the at least one mandrel substantially simultaneously.

63. (Previously Presented) The apparatus of claim 61, wherein the first roller and the at least a second roller are configured to engage the at least one mandrel in a sequential manner.

64. (Previously Presented) The apparatus of claim 38, wherein the at least one mandrel exhibits a cross-sectional geometry taken substantially transverse to a length thereof, and wherein the plurality of rollers includes a first roller configured to engage a portion of the at least one mandrel at a first location with respect to the cross-sectional geometry and at least a second roller configured to engage another portion of the at least one mandrel at a second location with respect to the cross-sectional geometry, the first location be substantially different than the second location.

65. (Previously Presented) The apparatus of claim 64, wherein the first roller and the at least a second roller are engaged with the at least one mandrel substantially simultaneously.

66. (Previously Presented) The apparatus of claim 64, wherein the first roller and the at least a second roller are configured to engage the mandrel in a sequential manner

67. (Previously Presented) The apparatus of claim 36, wherein the carriage assembly is movably coupled to the base such that it displaces the at least one roller in a longitudinal direction with respect to the substantially elongated geometry of the at least one mandrel.

68. (Previously Presented) The apparatus of claim 36, wherein the at least one roller is configured to move laterally with respect to a length of the substantially elongated geometry of the at least one mandrel while maintaining engagement with the at least one mandrel as the at least one roller is displaced in a direction along the length of the substantially elongated geometry of the at least one mandrel.

69. (Currently Amended) An apparatus for forming elongated composite structural members comprising:
a base;
at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry;
a carriage assembly movably coupled to the base;
a plurality of rollers, each roller of the plurality exhibiting a geometry configured to at least partially complementarily engage the least one mandrel as ~~the at least one~~ each roller of the plurality of rollers rolls there along, each roller of the plurality being coupled with the carriage assembly, wherein the plurality of rollers includes a first roller configured to engage a first portion of the mandrel and at least a second roller configured to engage a second portion of the mandrel, the first portion of the mandrel being substantially different than the second portion of the mandrel; and
at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the plurality of rollers.

70. (Currently Amended) An apparatus for forming elongated composite structural members comprising:

- a base;
- at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry and a cross-sectional geometry taken substantially transverse to a length thereof;
- a carriage assembly movably coupled to the base;
- a plurality of rollers, each roller of the plurality exhibiting a geometry configured to at least partially complementarily engage the least one mandrel as ~~the at least one~~each roller of the plurality of rollers rolls there along, each roller of the plurality being coupled with the carriage assembly, wherein the plurality of rollers includes a first roller configured to engage a portion of the at least one mandrel at a first location with respect to the cross-sectional geometry and at least a second roller configured to engage another portion of the at least one mandrel at a second location with respect to the cross-sectional geometry, the first location be substantially different than the second location; and
- at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the plurality of rollers.

71. (Previously Presented) An apparatus for forming elongated composite structural members comprising:
a base;
at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry;
a carriage assembly movably coupled to the base;
at least one roller exhibiting a geometry configured to at least partially complementarily engage the least one mandrel as the at least one roller rolls there along, the at least one roller being coupled with the carriage assembly, wherein the carriage assembly is movably coupled to the base such that it displaces the at least one roller in a longitudinal direction with respect to the substantially elongated geometry of the at least one mandrel; and
at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the at least one roller.

72. (Previously Presented) An apparatus for forming elongated composite structural members comprising:
a base;
at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry;
a carriage assembly movably coupled to the base;
at least one roller exhibiting a geometry configured to at least partially complementarily engage the least one mandrel as the at least one roller rolls there along, the at least one roller being coupled with the carriage assembly, wherein the at least one roller is configured to move laterally with respect to a length of the substantially elongated geometry of the at least one mandrel while maintaining engagement with the at least one mandrel as the at least one roller is displaced in a direction along the length of the substantially elongated geometry of the at least one mandrel; and
at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the at least one roller.

73. (Previously Presented) An apparatus for forming elongated composite structural members comprising:

a base;

a first mandrel mounted on the base, the first mandrel exhibiting a first geometric configuration;

a second mandrel mounted on the base, the second mandrel exhibiting a second geometric configuration different from the first geometric configuration;

a carriage assembly movably coupled to the base;

at least one roller exhibiting a geometry configured to at least partially complementarily engage at least one of the first mandrel and the second mandrel as the at least one roller rolls there along, the at least one roller being coupled with the carriage assembly; and

at least one force-applying mechanism configured to apply a desired force to at least one of the first mandrel and the second mandrel through the at least one roller.

74. (Previously Presented) An apparatus for forming elongated composite structural members comprising:

a base;

at least one mandrel mounted on the base, the at least one mandrel exhibiting a substantially elongated geometry, the at least one mandrel including a first section extending along a longitudinal axis and a second section which deviates from the longitudinal axis;

a carriage assembly movably coupled to the base;

at least one roller exhibiting a geometry configured to at least partially complementarily engage the least one mandrel as the at least one roller rolls there along, the at least one roller being coupled with the carriage assembly, wherein the carriage assembly and the at least one roller are configured to maintain engagement with the second section as it deviates from the longitudinal axis; and

at least one force-applying mechanism configured to apply a desired force to the at least one mandrel through the at least one roller.